



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/637,087 Confirmation No. 9091  
Applicant : Man Mohan Rai and Nateri K. Madavan  
Filed : 31 July 2003  
TC/A.U. : 2129  
Examiner : Joseph P. Hirl  
Docket No. : ARC-14281-3  
Customer No. : 25186

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT  
BEFORE MAILING DATE OF EITHER A FINAL ACTION OR NOTICE OF  
ALLOWANCE [37 C.F.R. 1.97(c)]**

**TIME OF TRANSMITTAL OF ACCOMPANYING  
INFORMATION DISCLOSURE STATEMENT**

1. The information disclosure statement transmitted herewith is being filed after three months of the filing date of this national application or the date of entry of the national stage as set forth in § 1.491 in an international application or after the mailing date of the first Office action on the merits, whichever event occurred last but before the mailing date of either:

- (1) a final action under § 1.113 or
- (2) a notice of allowance under § 1.311,

whichever occurs first.

**FEE PAYMENT**

3. Applicant elects the option to pay the fee set forth in 37 C.F.R. 1.17(p) for submission of an information disclosure statement under § 1.97(c) (\$180.00).

Fee due \$180.00

06/30/2006 FHETEKI1 00000033 140116 10637087

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**METHOD OF PAYMENT OF FEE**

4. ☐ Attached is a check in the amount of \$\_\_\_\_.
- ☒ Charge Deposit Account No. 14-0116 in the amount of \$180.00.  
A duplicate of this request is attached.

If any additional fees are due, please charge Deposit Account No. 14-0116.

Reg. No.: 26,994

Tel. No.: (650) 604-0887

John F. Schipper 22 June 2006  
John F. Schipper date  
Patent Attorney  
NASA Ames Research Center  
Mail Stop 202A-4  
Moffett Field, CA 94035-1000

<b>INFORMATION DISCLOSURE CITATION</b> Form PTO-1449 (Modified) (Use several sheets if necessary)	ATTY. DOCKET NO. ARC-14281-3	SERIAL NO. 10/637,087
	APPLICANT Man M. Rai and Nateri K. Madavan	
	FILING DATE 31 July 2003	GROUP 2129

**U.S. PATENT DOCUMENTS**

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate

**FOREIGN PATENT DOCUMENTS**

	Document Number	Date	Country	Class	Subclass	Translation	
						Yes	No

**OTHER ART** (Including Author, Title, Date, Pertinent Pages, Etc.)

	Drela, M., "Elements of Airfoil Design Methodology," in <i>Applied Computational Aerodynamics Progress in Astronautics and Aeronautics</i> , Vol. 125, pp. 167-189, 1990. P. A. Henne, Ed.
	Volpe, G., "Inverse Airfoil Design: A Classical Approach Updated for Transonic Applications," in <i>Applied Computational Aerodynamics, Progress in Astronautics and Aeronautics</i> , Vol. 125, pp. 191-220, 1990. P. A. Henne, Ed.
	Jameson, A., "Optimum Aerodynamic Design Using CFD and Control Theory," AIAA Paper, No. 95-1729-CP, 1995.

EXAMINER	DATE CONSIDERED
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**EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

**INFORMATION DISCLOSURE CITATION**

Form PTO-1449 (Modified)

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Narducci, R., Grossman, B., and Haftka, R. T., "Sensitivity Algorithms for an Inverse Design Problem Involving a Shock Wave," *Inverse Problems in Engineering*, Vol. 2, pp. 49-83, 1995.

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Faller, W. E., and Schreck, S. J., "Unsteady Fluid Mechanics Applications of Neural Networks," AIAA Paper No. 95-0529, AIAA 33<sup>rd</sup> Aerospace Sciences Meeting, Reno, Nevada, January 9-12, 1995.

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Hajela, P., and Berke, L., "Neural Networks in Structural Analysis and Design: An Overview," AIAA Paper No. 92-4805-CP, 4<sup>th</sup> AIAA/USAF/NASA/OAI Symposium on Multidisciplinary Analysis and Optimization, Cleveland, Ohio, September 21-23, 1992.

Huang, S. Y., Miller, L. S., and Steek, J. E., "An Exploratory Application of Neural Networks to Airfoil Design," AIAA Paper No. 94-501, AIAA 32<sup>nd</sup> Aerospace Sciences Meeting, Reno, Nevada, January 10-13, 1994.

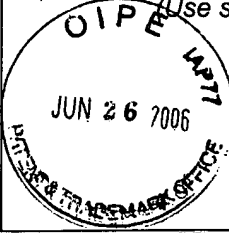
Sanz, J.M., "Development of a Neural Network Design System for Advanced Turbo-Engines," Fourth U.S. National Congress on Computational Mechanics, August 7-8, 1997, San Francisco, California.

Rai, M. M., and Madavan, N. K., "Application of Artificial Neural Networks to the Design of Turbomachinery Airfoils," AIAA Paper No. 98-1003, AIAA 36<sup>th</sup> Aerospace Sciences Meeting Reno, Nevada, January, 1998.

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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)			
	Pierret, S., and Van den Braembussche, R. A., "Turbomachinery Blade Design Using a Navier-Stokes Solver and Artificial Neural Network," <i>Journal of Turbomachinery</i> , Vol. 121, pp. 326-332, 1999.		
	Barron, A. R., "Approximation and Estimation Bounds for Artificial Neural Networks," <i>Machine Learning</i> , VOL. 14, pp. 115-133, 1994.		
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	Dring, R. P., and Heiser, W. H., "Turbine Aerodynamics," in <i>Aerothermodynamics of Aircraft Engine Components</i> , Oates, G. C., Ed., pp. 219-271. AIAA, New York, 1985.		
	Dunn, M., Bennett, W., Delaney, R. A., and Rao, K. V., "Investigation of Unsteady Flow Through a Transonic Turbine Stage: Part 11-Data/Prediction Comparison for Time-Averaged and Phase-Resolved Pressure Data," AIAA Paper No. 90-2409, 26 <sup>th</sup> AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Orlando, FL, July 16-18, 1990.		
	Rai, M. M., and Madavan, N. K., "Aerodynamic Design Using Neural Networks," AIAA Paper No. 98-4928, Seventh AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, St. Louis, MO, September 2-4, 1998.		
	Madavan, N. K., and Rai, M. M., "Neural Net-Based Redesign of a Gas Generator Turbine for Improved Unsteady Aerodynamic Performance," AIAA Paper No. 99-2522, 35 <sup>th</sup> AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Los Angeles, CA, June 20-24, 1999.		
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